

Historic centers between reconstruction and recovery. Urban planning considerations on a post-earthquake survey in Amatrice and Accumoli

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Abstract – This paper synthesizes a research conducted for the Italian Ministry of Culture - Superintendence of Rome and Rieti between 2023 and 2024. Its principal aim is to point out the different conditions of minor settlements and built elements still presenting urban and architectural-historical value after the destructions caused by the 2016 earthquake in Central Italy. This general glance was achieved especially for the Amatrice and Accumoli territories with different analysis and studies. Their results can be considered from different points of view and allow to focus on significant aspects: data to be used as a fundamental information for post-seismic planning, different scales to be considered, available tools to be implemented to ease reconstruction and prevention in ancient small towns. A planning point of view seems to be necessary to offer effective proposals to reduce seismic risk of historical settlements in fragile territories, such the ‘inner areas’ of the Appennine Regions.

I. INTRODUCTION

This article is deeply connected to the paper presented in this same context, “Planning tools for historic centres reconstruction. An overview of Central Italy 2016 earthquake“ (M. Giuffrè, F. Fazio). Two assumptions can be considered: the historic settlements in seismic risk territories can be regarded as a particular form of historical heritage; specific knowledge and tools should be defined to facilitate assessment and interventions for reconstruction phase and prevention. These premises allow to re-connect, in a partially metaphoric way, to the concept of ‘metrology’, if it is intended as ‘right measure’ and thus as a way to define the right tools. An urban scale, and a planning point of view, seem to be essential references, as seen in pluri-decennial reflections about historic centres and as a result of a critical review of recent reconstruction processes. Moreover, critical aspects of reconstructions are shown as the consequence of the lack of these planning references, also in many reflections coming from different fields, such as restoration and conservation disciplines [1].

These issues clearly result observing the Central Italy earthquake in 2016. This event, one of the most destructive in last decades, affected an articulated territorial system formed by many different historic villages in a very diversified reticular settlements; many of them already were in a demographic fragility condition. However, even facing this complex articulation and weakness, in 2023 a systematic view of urban scale losses and minor settlement destructions was not available yet.

To fill in this gap, facing an increasing awareness of the necessity to widen the knowledge to be considered in the reconstruction process, a specific demand of the Superintendence of Rome and Rieti has been defined. As a response, a survey of the present state of small historic centres has been achieved in two of the most damaged municipal territories such as Amatrice and Accumoli in Latium Region. [2].

The paper exposes the general lines and main results of this work, suggesting the ways to adopt the planning point of view and its specific knowledge as a contribution in the reconstruction and recovery process in a territorial perspective. The article is divided in four parts: a brief explanation of the planning point of view; a synthetic glance at the critical aspects found in the reconstruction process for historic urban heritage; the situation of the small settlements in the two territories; synthetic conclusions on the possible applications of the research.

II. A PLANNING POINT OF VIEW

Framing the point of view requires to recall some planning principles concerning post-seismic reconstruction:

1. Urban damage is wider than a simple sum of building collapses: it is represented by the loss of organization and functionality of settlements and the risk to eradicate entire communities. It is thus necessary to adopt coordinated tools at an appropriate scale [3].
2. An effective planning action should be designed not only for emergency management and reconstruction, but most of all for urban recovery and prevention against future events. This principle is relevant also for a better use of public resources [4] [5].

3. Seismic risk and reconstructions are not only a specific issue: no single discipline alone can be sufficient to face the matter with effectiveness [6].
4. Local communities must be an active part of the recovery process in every phase. A general vision is needed; recovery is a social issue, not only a technical or specialistic matter. [7] [8] [9].

In this perspective, it is easy to understand the primary role of historic heritage, as a fundamental system to re-achieve and re-interpret the characteristics of different settlements for the communities involved into the seismic events according to recovery objectives. Both reconstruction and heritage restoration represent public interests and collective values. This implies a diversified set of tools and the need to cooperate between different institutions, promoting a constant dialogue between public bodies and local communities [10] [11] [12].

III. THE RECONSTRUCTION PROCESS. A SYNTHETIC LOOK AT SOME CRITICAL ISSUES

The above-mentioned principles allow to frame the research on Amatrice and Accumoli in a general assessment of the reconstruction process in the two municipalities, even if compared with similar experiences [13] [4] [15]. In this way it is also possible to clarify the reasons of the impulse the Superintendence had to fill in the knowledge gap recalled in the Introduction.

At the beginning of this research (2023) different critical aspects of the interventions on historic settlements and built heritage were already clear, most of all showed in current ways to face restoration and recovery of urban spaces. Of course, “heritage“ represents every built element in which a historical value is recognized, not only listed or protected ones, since they cover a very small fraction of historical buildings. (Tab.1).

Three main issues can be remembered as follows:

1. the lack of data on urban consequences of destructions and large scale demolitions;
2. a non-coordinated amount of different interventions, e.g. in urban unitary spaces, due to the prevalence of building-scale regulations as the only reference;
3. the limited effectiveness found in the procedures for restoration and recovery of built and urban heritage.

Table 1. Essential data for the study areas

	Amatrice	Accumoli
Population (*)	2293	547
Inhabitants per town. (*)	33	28
N. of settlements	69	17
N. of historic settlements	67	17
% of historic settlements	97%	100%
Historic value buildings (**)	87	35
Listed buildings	18	5
% Listed buildings	20.6%	14%

(*)National Statistics Institute 2021 - (**)Ministry of Culture

1. In several circumstances demolitions were necessary for safety reasons. However they have often been considered simply as a technical issue, despite specific Ministry of Culture Guidelines (2017); thus they have been oriented only to ease reconstruction initiatives [16] [17]. Many total demolitions have been executed without leaving any trace of the historic urban system and without a systematic survey of what was going to be destroyed. This choice seemed to be considered an unquestionable decision, even facing the chance of a different approach. For the small villages when a total delocalization has been decided, for instance - like San Giovanni in Accumoli - one can wonder why some trace of the precedent urban system could not be saved; even only as archaeological traces, requiring a “project of ruins”. They could have been relevant for the collective memories connected to those sites, whether permanent or seasonal residence.

2. The urban value expressed by specific planning reconstruction tools, such the Extraordinary Reconstruction Programmes (PSR in Italian), is still a potentiality rather than an explicit result. At least if “urban value“ is meant not only as an administrative issue, but also as the ability to focus on the right scale and to promote coordinated initiatives regarding unitary contexts. This lack can be found in many different aspects, especially in the concrete ways to develop PSR; also reminding that in Amatrice and Accumoli, after eight years, in fact they are not yet completely operational. Moreover, in many cases, the largest scale considered in PSR to coordinate different interventions concern structural aggregates, despite planning guidelines already existed (Ord. 107/2020); so also larger unitary urban spaces or project themes (such as alignments, or built front on squares or streets) have been treated without any wider scale reference [18].

3. Some words should be spent also about “compliant interventions“, identified by the regulations as building reconstructions similar to previous dimensional and typological features. But, in practice, compliance criteria cannot avoid alterations and losses of historic values. Detailed instructions can rarely be found in PSR or municipal regulations, and at the same time there are no effective control procedures, since a simple auto-declaration is required. These rules also apply in historic centres and areas subject to landscape protection constraints. Furthermore, another issue should be faced: how to concretely behave towards single saved elements of a historic value, such as stone portals or other carved elements, removed from damaged buildings before their demolition and then set aside in temporary storages. How to encourage their reuse is still an open question, both from an architectural and from an economic point of view.

Overall, this approach has two obvious consequences: the risk to face a wider destruction of still existing built heritage and to increase the duration of the reconstruction - an only apparent paradox - which can cause the definitive abandonment of many territories.

IV. AMATRICE AND ACCUMOLI: A STUDY ON THE SITUATION OF SMALL HISTORICAL TOWNS

A. Objectives

The study on Amatrice and Accumoli is a contribution to contrast the above mentioned risks: further loss of historic heritage and abandonment of small villages. It aims to obtain an updated picture of the present conditions of small historic villages, to be used as a shared reference for different institutions (Municipalities, Regional special reconstruction offices, Superintendencies). This framework is designed to identify priorities for further investigations and interventions on built heritage, to ease the articulation of tools and procedures at various scales, to coordinate and reduce projects processing times.

B. Activities and studies

To achieve these results, as a preliminary operation, a general photographic survey of all historic hamlets of Amatrice (65 out of 69) and Accumoli (all 17 small villages in the municipal boundaries) was carried out. Several activities have been subsequently set up:

1. First operation consisted in recognising different urban situations (*types of settlements*) according to three general criteria;

- *consistency* of different elements of a historic value in relation to the total number of buildings and aggregates;
- *continuity* of elements of a historic value (whether isolated or composed in a wider urban context);
- *coexistence* of several elements of a different nature (buildings, open spaces, pathways, other elements).

In this way a map of different types of settlements was built, applying the described criteria to the encountered situations. Five categories have been identified (fig. 1-2):

A: Settlements with limited destructions / demolitions of the historical built heritage, with a prevailing presence of building aggregates of historical value;

B1: Settlements with destructions / demolitions of the historical built heritage, with a significant presence of buildings of historical value;

B2: settlements with severe destructions of the historical built heritage;

C: Settlements characterized by an almost total destruction/demolition of the historical built heritage, with limited presence of single elements of historical value;

D: Settlements characterized by an almost total destruction of the historical built heritage, to be partially or totally delocalized (only for Accumoli).

2. Afterwards, a *cartographic cataloguing* was carried out at a cadastral parcel detailed scale. Destroyed or demolished historic buildings, preserved historic buildings, ordinary recent buildings and reconstruction ongoing interventions have been traced, offering a systematic picture of the present situation.

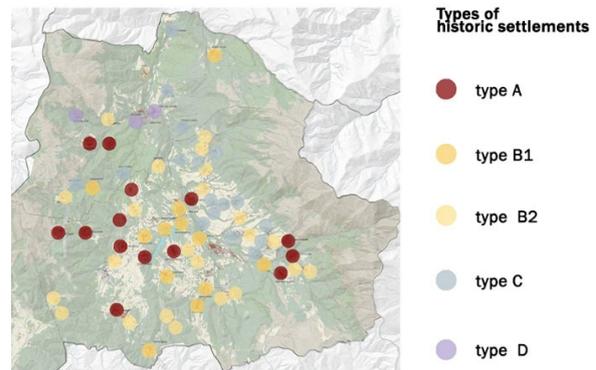


Fig. 1. Different types of historic settlements in Amatrice after Central Italy Earthquake

3. Along with this detailed survey, a photo and cartographic collection of the existing situation before the 2016 earthquake has been documented for the most damaged or destroyed historic settlements. A synthetic way to testimony the importance of lost urban spaces and to offer minimal references for reconstructions choices.

4. Finally, on these basis some urban scale references for new plans have been defined, with the aim of overcoming the building scale. These references can be implemented to integrate reconstruction programmes, especially for Amatrice.



Fig. 2. Examples of different types of historic settlements in Amatrice

C. Overviews and results

All these elaborations show that destructions are wide, but not total, as would instead result from a widespread interpretation oriented towards a “faster“ reconstruction.

At a general glance, type A and type B settlements, where historical heritage and urban fabrics are still prevailing, represent 36% of Amatrice hamlets and 22% of Accumoli villages.

Destructions are particularly relevant for type C and D settlements, where they reach also the two-thirds of the total amounts of buildings. Since there aren't specific and systematic data, it is not easy to distinguish between collapses and demolitions. However, according to a comparison between post-event pictures shot in different years, it is possible to say that demolitions concern a significant number of cases (fig. 3-4).

These findings may clarify the role of the documentation of the pre-earthquake conditions of destroyed or demolished settlements. Pictures have been collected from websites of local associations or from open source satellite maps. Consulting them one can recognize the seriousness of the losses for the cultural and urban heritage; and these losses derive from damages but also from the subsequent methods of intervention in reconstruction process (fig. 5).

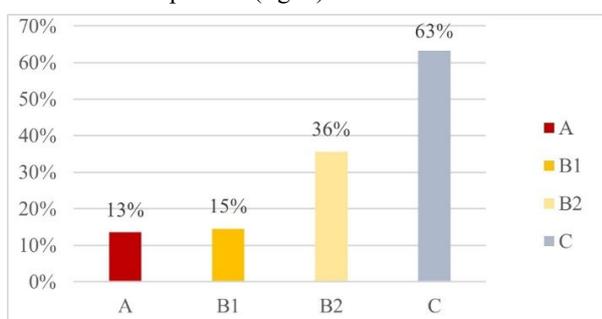
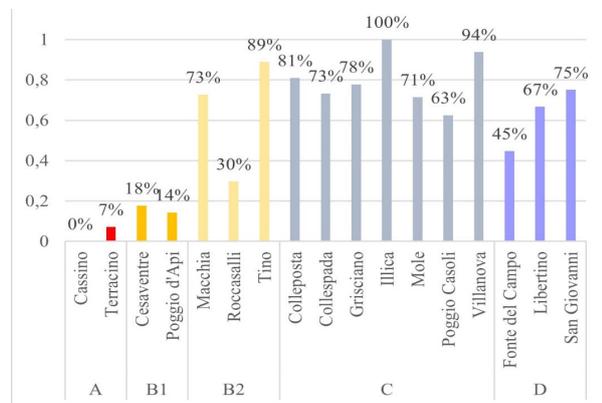


Fig. 3 Amatrice. Percentage of destroyed or



demolished buildings for type of settlements

Fig. 4 Accumoli. Percentage of destroyed or demolished buildings for type of settlements (detail)

The final suggested urban scale indications derive from the entire set of these studies, and they can be used to find a more integrated approach to recovery and reconstruction. Different categories are defined both to deepen the preliminary surveys to PSR and to propose urban scale references to be applied in several cases, especially where unitary urban spaces are still recognizable or can be recovered with coordinated operations [19] [20].



Fig. 5 Example of pre-earthquake conditions

The research results show that it is still necessary to reconsider several reconstruction strategies. Inter alia, the diversity of urban situations requires the ability to coordinate different responses. At least if the task to be proposed is not only a reconstitution of building volumes but it is extended to reinterpretation of historic heritage as a fundamental component for post-seismic recovery.

As a contribution to a wider debate three possible development can be pointed out.

1. It is necessary to going on monitoring and delve deeper to define an updated picture of reconstruction initiatives. For instance, not only monitoring of ongoing constructions sites is fundamental, but also is locating the sites where other reconstruction projects have been already approved (even if not yet executed), so that one can see where other interventions and necessary corrections are still possible.

2. It also seems appropriate to use the identification of different types of settlements as a reference to diversify the reconstructions objectives. Going from type A to type C or D it is possible to vary not only priorities but also categories of intervention: from restoration to recovery to partial re-definition of the urban layout, up to the reinterpretation of the urban traces where destructions or de-localizations have prevailed (a synthetic example is shown in tab. 2). This operation also permits to measure out complexity and times of reconstruction procedures; this is the main reason why such an identification could be usefully taken as a reference immediately after a seismic event, if acquired according to specific conditions.

3. Finally, in search of more effective references for recovery of urban heritage, a critical review of the regulations on compliant interventions seems to be a priority. It is necessary to find specific indications allowing to reconcile speed with effectiveness of conservation of urban context; innovative interventions can be found as long as they show a real compatibility with the historic and urban values.

Table 2. Planning references for types of settlements

Type of settlement	Urban planning references
A	Conservation of the urban layout restoration of buildings and urban spaces of historic value – Possible listing as historic heritage
B1	Maintenance of the urban layout, recovery of historic buildings
B2	Maintenance / recovery of the urban layout, recovery of historic buildings, indications for urban interventions consistent with pre-earthquake conditions
C	Re-proposal of the previous urban layout (where possible), indications for urban interventions with modification consistent with pre-earthquake conditions and landscape context
D	Partial delocalization: see C Total delocalization: recovery of main historic buildings (where possible), definition of pathways and didactical supports for cultural fruition

Existing plans themselves should be rethought. Starting to the Regional territorial landscape plan of Latium (PTPR); in which - incomprehensibly - all hamlets and small historical villages of Amatrice and Accumoli are not classified as historic settlements. At the same time also the reconstruction programmes (PSR) should be revised, in particular the Amatrice ones, since they show several inconsistencies to be overcome. A reciprocal coordination of different provisions and a wider range of preliminary knowledge seem to be necessary, most of all for a more effective protection of still existing historic urban values [21] [22]. There are many possible references to be identified to implement this program in practice: e.g. from recognizing unitary building fronts on main urban spaces, or defining integrated initiatives for public spaces, up to urban scale seismic prevention actions (fig. 6). Contiguous systems of different settlements can also be identified as places to promote coordinated forms of planning (fig. 7).

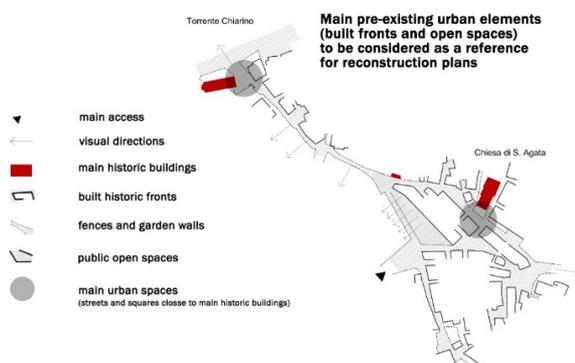


Fig. 6. Example of urban scale indications for recovery planning. In red: main historic buildings



Fig. 7 Systems of settlements to be considered in coordinated recovery plans

V. CONCLUSIONS AND PROPOSALS

Two final considerations can be exposed.

1. A frequent demand can be seen, “not to slow the reconstruction” with urban plans or heritage protection constraints. But on the contrary, after nine years from the earthquake, it seems to be clear that many delays derive just from lack of coordination. And heritage protection constraints - an “extreme” measure - sometimes are necessary just because plans are not effective. Of course plan themselves are not enough, if they are considered as a ‘definitive’ measure: a shared vision and different kinds of resources are also fundamental, as long as the capacity to manage conflicts in a complex process. But they are necessary anyway [23].

2. Many different territories in Italy can be seen as seismic risk areas, where several historic settlements of a high urban value and high vulnerability can be found. A vulnerability that is also socio-economic fragility, as the many inner areas at risk of desertion. Moreover, these areas are often affected by different natural hazards; and therefore require a multi-level response, in order to coordinate preventive actions and reduce possible impacts. In similar contexts, systematic studies able to recognize different conditions of settlements and heritage could be precious in case of future events, as well as having an undoubted cognitive value [24].

Many examples can be showed: such as the preventive identification of historic built aggregates, the localization of principal urban functions and main urban spaces of a collective value, the distribution of permanent or temporary population in different settlements. These data are usually available only after specific studies or surveys (such as CLE or SUM analysis), or inside recovery plans or seismic risk assessments at an urban scale. But they would be very useful for every post-seismic intervention. And, of course, these investigations would be much more effective as a preventive study more than in a post-seismic phase.

The hope is that Amatrice and Accumoli reconstruction, if seen as a learning opportunity, may lead to setting up several urban and territorial preventive studies in critical areas, increasing readiness for future events.

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